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IN THE US PATENT & TRADEMARK OFFICE

APPLICANT: W.A. WINKLER CONF. #: 7146  
SERIAL #: 10/ 574,988 DOCKET #: 870-003-202  
FILED: 6 APR. 2002  
ART UNIT: 3746 EXAMINER: Charles G. FREAY

Commissioner for Patents 13 FEB. 2008  
PO BOX 1450  
ALEXANDRIA VA 22313

Sir:

Responsive to the FINAL Office Action of 13 DEC. 2007,  
the term for response to which expires 13 MAR. 2008, please  
amend objected-to claim 1, and cancel, without prejudice,  
rejected claims 31-41, as follows:

CERTIFICATE OF EFS-WEB TRANSMISSION

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The undersigned certifies that this document is being submitted via  
EFS-WEB on 13 FEB. 2008.

/Milton Oliver/

1. (Currently Amended) An arrangement for cooling a circuit board, ~~(2)~~ comprising:  
a generally flat carrier frame ~~(44)~~;  
elements ~~(41, 43, 44, 80)~~ connecting said frame to the circuit board ~~(2)~~ and supporting said frame thereon;  
~~a ring-like~~ an annular air passthrough aperture ~~(47)~~; and  
a miniature fan ~~(3)~~ that is mounted on a first side ~~(C)~~ of the carrier frame ~~(44)~~ facing away from the circuit board ~~(2)~~ and at a distance from the circuit board, and is equipped with  
a fan wheel ~~(31)~~ that, during operation, rotates about a rotation axis (A) and transports air through the annular air passthrough aperture ~~(47)~~, there being provided on the carrier frame ~~(44)~~, on the side of the air passthrough aperture ~~(47)~~ facing toward the circuit board ~~(2)~~,  
an air-directing element ~~(5)~~ which serves to deflect the flow direction of at least a portion of the air transported, during operation, through the air passthrough aperture ~~(47)~~, wherein  
the air-directing member ~~(5)~~ is formed with penetrations ~~(60, 62, 64, 66, 70, 72, 74, 76, 78)~~ in order to direct, through a wall of the air-directing member ~~(5)~~, a portion of the air flow delivered by the fan ~~(3)~~.

2. (Currently Amended) The arrangement according to claim 1, wherein the air-directing element ~~(5)~~ is configured as a bell that widens in a radial direction ~~(R)~~ away from the fan ~~(3)~~.

3. (Currently Amended) The arrangement according to claim 1, wherein the carrier frame ~~(44)~~ comprises, radially inside the air passthrough aperture ~~(47)~~, a support member ~~(45)~~ on which the fan ~~(3)~~ is arranged.

4. (Previously Presented) The arrangement according to claim 3, wherein the support member (45) is joined, via struts (45a), to a part (40) of the carrier frame (4) located radially outside the air passthrough aperture (47).

5. (Previously Presented) The arrangement according to claim 4, wherein the part (40) of the carrier frame (4) located outside the air passthrough aperture (47) is configured as a tubular segment.

6. (Previously Presented) The arrangement according to claim 3, further comprising  
an electronically commutated motor (33) that is mounted on the support member (45) and coupled to drive the fan (3); and  
a circuit plate (6), which connects the motor (33) to electrical connecting leads (61), and is arranged between that motor (33) and the support member (45).

7. (Previously Presented) The arrangement according to claim 6, wherein the circuit plate (6) comprises electronic components for commutation of the motor (33) serving to drive the fan.

8. (Previously Presented) The arrangement according to claim 6, wherein the electrical connecting leads (62) are guided in the carrier frame (4), and are implemented at their circuit-board end (D) for electrical contacting with the circuit board (2).

9. (Previously Presented) The arrangement according to claim 8, wherein the connecting leads are implemented as wire connections (61) that are at least partially surrounded by a sheath (51).

10. (Previously Presented) The arrangement according to claim 5, wherein said fan includes a fan wheel (31) having an outer side which, together with an inner side (47a) of the part (40) implemented in the manner of a tubular segment, forms an annular space (47) inside which, during operation, the blades (32) of the fan wheel (31) rotate.

11. (Previously Presented) The arrangement according to claim 10, wherein the cross section of the annular space (47) widens in the direction toward its outlet.

12. (Previously Presented) The arrangement according to claim 1, wherein the carrier frame (4) comprises, on its side facing away from the circuit board, an end surface (42) on which a sealing ring (7) is arranged.

13. (Previously Presented) The arrangement according to claim 12, wherein a depression, inside which the fan (3) is arranged, is provided inside the end surface (42) of said carrier frame.

14. (Cancelled)

15. (Previously Presented) The arrangement according to claim 1, wherein the fan (3) is arranged to transport, through the air passthrough aperture (47), air coming from the air-directing element (5).

16. (Previously Presented) The arrangement according to claim 1, wherein the fan (3) is arranged to transport air through the air passthrough aperture (47) in a direction that goes from the air passthrough aperture (47) to the air-directing element (5), in order to deflect the air at that element in a direction away from the rotation axis (A) of the fan (3).

17. (Currently Amended) A carrier frame ~~(4)~~ for installation of a fan ~~(3)~~ at a predetermined distance from a circuit board ~~(2)~~, comprising:

a support member ~~(45)~~ that, in an installed state, is at a distance from the circuit board ~~(2)~~ and serves as a carrier for a motor ~~(33)~~ of the fan ~~(3)~~, which support member ~~(45)~~ is surrounded by an outer air-guiding member ~~(14)~~ that is joined via at least one joining member ~~(45a)~~ to the support member ~~(45)~~, which joining member ~~(45a)~~ crosses the air flow passage ~~(47)~~;

installation elements ~~(41, 43, 44, 80)~~ being provided for installation of the carrier frame ~~(4)~~ on the circuit board ~~(2)~~; and  
an air-directing member ~~(5)~~ being provided on the support member ~~(45)~~ on a side of the support member ~~(45)~~ facing toward the circuit board ~~(2)~~, which air-directing member ~~(5)~~ serves to deflect the flow direction of at least a portion of air transported, during operation of the fan ~~(3)~~, through the air flow passage ~~(47)~~,

wherein the air-directing member ~~(5)~~ is formed with at least one penetration ~~(60, 62, 64, 66, 70, 72, 74, 76, 78)~~ that serves to direct, through a wall of the air-directing member ~~(5)~~, a portion of the air flow delivered by the fan ~~(3)~~.

18. (Previously Presented) The carrier frame according to claim 17, wherein the air-directing element (5) is shaped as a bell whose open side faces toward the circuit board (2).

19. (Previously Presented) The carrier frame according to claim 17, wherein the support member (45) is joined, via joining members (45a), to said air guiding member (40) located radially outside the air passthrough passage (47).

20. (Previously Presented) The carrier frame according to claim 19, wherein the air guiding member (40) located outside the air passthrough passage (47) is formed as a tubular segment.

21. (Previously Presented) The carrier frame according to claim 17, further comprising

an electronically commutated motor (33) mounted on the support member (45) in order to drive the fan (3).

22. (Previously Presented) The carrier frame according to claim 21, wherein a circuit plate (6), adapted to connect the motor (33) to electrical connecting leads (61), is arranged between that motor (33) and the support member (45).

23. (Previously Presented) The carrier frame according to claim 22, wherein the circuit plate (6) comprises electronic components for commutation of the motor (33).

24. (Previously Presented) The carrier frame according to claim 22, in which the electrical connecting leads (62) are guided inside the frame, which leads are formed at their circuit-board ends with terminals (D) for electrical contact with the circuit board (2).

25. (Previously Presented) The carrier frame according to claim 24, wherein the connecting leads are implemented as wire connections (61) that are at least partially surrounded by a sheath (51).

26. (Previously Presented) The carrier frame according to claims 20, wherein an outer side of the fan wheel (31) forms, together with an inner side (47a) of the part (40) configured as a tube section, an annular space (47) inside which, during operation, the blades (32) of the fan wheel (31) rotate.

27. (Previously Presented) The carrier frame according to claim 26, wherein the cross section of the annular space (47) widens adjacent at least one end portion.

28. (Previously Presented) The carrier frame according to any of claim 17, wherein the frame has a side facing away from the circuit board (2), defining an end surface (42) on which a sealing ring (7) is arranged.

29. (Previously Presented) The carrier frame according to claim 28, wherein a depression for receiving a fan (3) is formed inside the end surface (42).

30. (Cancelled).

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Cancelled)

41. (Cancelled)

REMARKS

Applicant acknowledges the Office Action of 13 DEC. 2007 and has made the correction to claim 1 required in paragraph 2 of the Action. Some reference numerals have been cancelled, as superfluous, now that the Office has indicated that the claims are allowable. According to MPEP §608.01(m), "The use of reference characters is to be considered as having **no effect** on the scope of the claims."

In order to expedite prosecution, claims 31-41 have been cancelled, without prejudice. Claims 14 and 30 were previously cancelled. No fees are believed necessary for this amendment; if any fee **is** required, kindly charge Dep. Account 23-0442.

All of the pending claims were indicated, at the bottom of page 4 of the Office Action, to be allowable, so the *entire application* is now in condition for allowance.

If any issues remain, the Examiner is invited to telephone the undersigned.

Respectfully submitted,  
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